

performance at Weimar on the evening of New Year's Day, 1801. Goethe, Schiller, and Wieland had all been present, and each left a record, Goethe entering in his Tagebuch the bare fact, "Abends in der Schöpfung"; Schiller, "I took little pleasure in it, as it is a 'charakterlos Mischmasch.'" Wieland, however, was moved to express his enthusiasm in verse, which so pleased Haydn that he wished him to write the text for a new oratorio.

In another case, that of the solo cantata, *Arianna a Naxos*, the original edition, Vienna [1790], was supplemented by a copy in manuscript which had belonged to Lady Hamilton, one of the pieces from the collection recently given to the University Library by Mrs. Harkness. There exists a letter from Haydn to his publisher, Artaria, written on September 3, 1800, saying: "Something more. My Princess, who has just come from Vienna, tells me that the Mylady Hammelton is coming to Eisenstadt on the sixth and that she wishes to sing my cantata, *Ariadne a Naxos*. I haven't a copy and so please procure one for me as soon as possible and send it to me here."

E. J. O'M.

Samuel F. B. Morse and His Invention of the Telegraph.

ONE hundred years ago, on October 1, 1832, Samuel Finley

Breese Morse, of the Class of 1810, sailed from Havre on the packet-ship "Sully." He arrived in New York six weeks later with the idea of the telegraph, as it is today, perfected and complete in his mind.

In honor of this event an exhibition has lately been arranged in the Yale Memorabilia Room. This exhibition is made possible chiefly through the generosity of Miss Leila Livingston Morse, granddaughter of the inventor, by her loan to the Library of a large body of very interesting material.

In addition to many personal relics—cups, medals, photographs, etc.—there has been shown a collection of Morse's writings, a long series of letters in his hand, and books from his library. A section of particular interest has been that exhibiting the original record of the books withdrawn by Morse from the Yale Library as an undergraduate, and a number of the actual books. Through the courtesy of the Yale Gallery of Fine Arts, photographs of the Morse paintings in the University are shown, and the original double portrait of the Reverend and Mrs. Hiram Bingham, painted in Boston in 1819, has been lent by the Honorable Hiram Bingham. With these are original sketches, largely from the collection of Miss Morse. Lastly, a group of significant early works on the telegraph introduces Morse's own great contribution. The chief object of interest in the

entire exhibition is one of the earliest instruments made by him while he was experimenting on his telegraph. Newspaper accounts, early telegraph forms, and maps complete this section of the exhibition.

Two large portraits by Morse of his father and mother, lent by Miss Morse, are likewise shown, together with several very illuminating letters written by them to their son when he was at Yale. These letters throw an interesting light on conditions in the college a century and a quarter ago, not only from an undergraduate's point of view, but from his family's as well. Finally, a few shelves have been devoted to books and manuscript letters by the inven-

tor's father, Jedidiah Morse, Class of 1783. This celebrated man was a pioneer in introducing into America the study of geography, and to examine his works by the side of those of his son, whose famous invention did so much to annihilate the physical aspects of that science, is peculiarly interesting.

Reproduced in this number of the LIBRARY GAZETTE is a letter from the Library's collection, written by Morse to Elias Loomis, then Professor of Natural Philosophy at Princeton. It is a highly interesting and important document by the inventor of the telegraph in regard to its early history.

C. B. H.

*Letter of Samuel Finley Breese Morse to
Elias Loomis.*

Printed from the Original in the Yale University Library.

NOTE: PROFESSOR CHARLES F. SCOTT has been kind enough to write the following memorandum in regard to this letter.

IN a letter written in 1809 during his Junior year at Yale, Morse said: "I shall be employed in the vacation in the Philosophical Chamber with Mr. Dwight, who is going to perform a number of experiments in *Electricity*." Two months later he wrote: "Mr. Day's lectures are very interesting. They are upon electricity. He has given us some fine experiments."

After he left college, while devoting himself primarily to art, he continued his interest in electricity. On the return voyage from Europe in 1832 there was a discussion on shipboard regarding electrical matters, from which he concluded that

electrical signals transmitted to a distance might be employed for communication. While Professor of Art at New York University, he conducted electrical experiments and after several years developed a form of telegraph. Later on, a Congressional appropriation enabled a line to be constructed from Washington to Baltimore over which the triumphal message, "What hath God wrought!" was sent on the twenty-fourth of May, 1844.

But there was controversy and rivalry and patent litigation. Morse was urged by his friends to make a general statement of the situation, which he did in a book published in 1867. In this book letters written by Professor Silliman and Professor Day of Yale are included, together with the testimony of those who saw Morse's original experiments. Presumably at the time of these controversies Professor Elias Loomis, B.A. 1830, who later taught at Yale, but who was at that time Professor of Natural Philosophy at Princeton, wrote to Morse, asking a number of specific questions which are answered in the letter here printed.

Po'keepsie, May 24th 1849.

Dear Sir,

Yours of 22^d inst. is received and I reply to the questions you ask respecting the Telegraph with great pleasure. Presuming you have a copy of the Questions asked I reply by number.

To Question 1st I reply, that in France I found it stated by the Secretary of the Academy of Industry in his Report to that Society on my Electric Telegraph that Franklin, suggested the idea of sending intelligence by electricity, and also that Berton a musical composer about the same time, made the same suggestion. Upon this authority alone, I have since been in the habit of attributing the first thought or idea of an Electric telegraph to Franklin. But I have not been able to learn on what authority the Secretary made that statement, nor have I found in any of Franklin's works any hint of the kind. Whatsoever, therefore, the suggestion may have been, it is evident no *plan* was proposed, or if proposed was deemed of no importance, or impracticable, else it would have been recorded, and made prominent.

To Question 2^d I reply; that I believe that I am the first who suggested the staining of paper by an electric current in 1832 on board the

ship Sully, when my present Telegraph essentially as now in operation was conceived and devised. At any rate I conceived this mode of marking my characters at that time, and practised it so far as to prove its practicability in 1834, 1835.

To Question 3^d I reply; I have not compared the two plans Wheatstone's & Houses sufficiently to say how far they resemble each other. I deem them both impracticable and useless, by reason of their complication, when brought into competition with my simpler plan, and hesitate not to predict that when my patent shall be thrown open to the public, both these plans of common *letter printing Telegraph*, will be disused and be preserved only as ingenious curiosities.

To Question 4 I reply; I am not aware that Wheatstone's *printing telegraph* is in operation on any line, anywhere, If you mean however, by "Wheatstone's telegraph" his "*needle telegraph*," I reply that the *needle telegraphs*, require no *receiving magnets*.

To Question 5th I reply, Yes, so far back as the latter part of the year 1835 at the New York city University immediately after taking possession of my rooms, I constructed a rude Registering apparatus, and *operated it successfully*. Prof. Gale became, at this period, my confidential companion and assistant, and saw this instrument in operation in January 1836. His deposition is in evidence, to that fact, in the suits now pending in Kentucky.

To Question 6th I reply; I laid down about 9 miles of pipe, from Baltimore towards Washington, but the lengths were from 300 to 400 feet each and were never connected but for about a mile. Four wires were introduced into the pipe, insulated by winding each wire with cotton, and passing it through shellac. The insulation of these wires was seriously injured in the introduction of the wire into the pipe, so much so as to prevent the independent use of any desired circuit formed of any one wire and the pipe, or earth or of any two wires together. The plan was abandoned not because it was deemed impossible to insulate a circuit in tubes beneath the earth, but for several other reasons. The expense was too great, to insulate with that degree of perfectness which was necessary. The expense of pipe also, and of ditching, and liability to be injured by wet, and in case of injury from accident or wantonness, the difficulty of ascertaining the injured part without an expensive apparatus and fixtures, were all so great in comparison with my simple and original plan of stretching the wires upon posts, that the pipe was abandoned. Four wires were introduced to provide against any defect from injury to any wire, and also to furnish for experiment *two complete metallic circuits*, and in case the ground circuit should prove to be inoperative for a long distance.

To Questions 7th 8th & 9th I reply that the practicability of *making the earth one half of an electric circuit*, was considered by me settled from my earliest conceptions of the Telegraph, for I looked upon its practicability as a *settled scientific fact* since Franklin's experiments on the Schuylkill, (which were familiar to me in my College course,) that common Electricity would pass on a conductor half metal, and half earth or water, nor had I a doubt that Galvanic electricity followed the same law. Yet I had made no experiment to assure me of the identity of operations of the two kinds, (if they are of two kinds,) for I considered it as I have observed a settled fact. In 1838, however, Dr Steinheil of Munich makes mention, in his notice of his Telegraph, to the French Academy of Sciences, of the successful result, of his experiments verifying the fact that with Galvanic electricity, *he had made the earth half the circuit*. If any credit, therefore, is due for repeating with Galvanic Electricity the same experiment that Franklin had tried with common electricity, and arriving at the same result, such credit I think is due to Dr Steinheil. I originally designed to adopt this mode of making my conductors, by *making the earth half the circuit*, and actually adopted it in the very first experimental line from Washington to Baltimore and have continued the practice in all my lines ever since.

If I can give you any further information on any point I shall be most happy to do it.

In the mean time believe me

With sincere respect

Y^r Mo. Ob. Serv^t

SAM^UL F: B: MORSE.

Prof. Elias Loomis.
Princeton, N. J.

The Yale Library Associates.

THE issue of the YALE UNIVERSITY LIBRARY GAZETTE for October, 1932, will be devoted entirely to the Yale Library Associates. This organization was founded in December, 1930, to further the interests of the Library. Its present officers are Frank Altschul, '08, chairman; Starling W. Childs, '91, vice-chairman; Thomas W. Farnam, '99, treasurer; Wilmarth S. Lewis, '18, secretary.